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THE PERSONNEL PROPONENCY  
OF SKILL CODE 3Y,  
SPACE ACTIVITIES

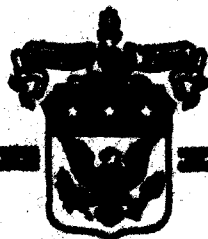
BY

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THE PERSONNEL PROPONENCY OF SKILL CODE 3Y, SPACE ACTIVITIES

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# ABSTRACT

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This study examines the personnel propensity for skill code 3Y, space activities, and the tasks with the personnel life-cycle management functions. The study reveals the status of personnel management of skill code 3Y and offers recommendations to improve the management of the skill code.

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## INTRODUCTION

In the future, the Army will place a greater importance on the use of space in its force modernization, AirLand Battle doctrine, and operations. As the Army continues to reduce its size in order to accommodate the realities of our nation's changing National Military Strategy, the management of soldiers and the positions they occupy are of vital importance to meet the challenges of the twenty-first century. This paper will examine the personnel management policies of officers involved in space activities. It will specifically focus on the roles of the personnel proponent for skill code 3Y, space activities, and make recommendations for improving the management functions associated with the proponentcy of skill code 3Y.

## HISTORICAL BACKGROUND

As early as March, 1983, a report of the Army Science Board, the ad hoc panel on the Army's Utilization of Space assets, recommended "that the Army establish career incentives for its officers to become experts in the definition, acquisition, and operation of space systems and to practice such expert abilities together with different, traditional Army skills."<sup>1</sup> Additional studies from the National Defense University and the ARINC Research Corporation in Colorado Springs, Colorado, recommended similar proposals to establish a career management program to develop and train personnel in space operations.

In 1986, the Army formed two organizations to manage its involvement in space. The first was the United States Army Space

Command which served as the Army's operational component to the United States Space Command. The second organization was the Army Space Institute which served as the Training and Doctrine Command's space programs integration office. Working together, these two organizations developed the Army Space Policy, the Army Space Master Plan, an operational concept for space, and a doctrinal publication on space operations.

From its beginning in 1986, the Army Space Institute served as the personnel proponent for skill code 3Y. In this role, it developed the initial concept for training and educating Army officers on the use of space to enhance the execution of AirLand Battle doctrine and implementation of strategic defenses. The Army Space Institute initiated the front-end analysis of Army space positions to identify the skills and knowledge required by officers assigned to skill code 3Y, space activities, and used this analysis to refine Army space training requirements and programs.<sup>2</sup>

As the personnel proponent, the Army Space Institute approved positions requiring the application of technical knowledge of either space environment, space system composition and functioning, space related technologies, or space operations. The Institute also established the criteria to qualify officers in space activities and award the skill code 3Y. On April 27, 1987, Headquarters, Department of the Army approved the description of positions and officer qualifications developed by the Army Space Institute. This document is listed in Appendix 1

and serves as the basis for position coding of personnel authorization documents and establishing the criteria to award officers the skill code 3Y.

In May, 1989, the Army Space Institute requested the Department of the Army to change the skill code 3Y to functional area 57, space activities. The Institute based the request on a perceived need to better manage and professionally develop those officers to satisfy their career needs in the area of space. After several major commands non-concurred with this action as unnecessary because of the small size of the program, the Department of the Army disapproved the request to establish a separate functional area for space activities.

The Department of the Army reorganized the Army Space Institute in July, 1990, and transferred the personnel proponency function to the United States Army Space Command in Colorado Springs. This action required the United States Army Space Command to work with the Office of the Deputy Chief of Staff of Staff for Operations, Space and Special Weapons, and the Army Personnel Command to develop a method of tracking space qualified personnel.<sup>3</sup>

The Army completed its most recent reorganization of its space program in August, 1992, with the designation of the United States Army Space and Strategic Defense Command as the overall agency responsible for Army space issues and management. This responsibility included the personnel proponency for skill code 3Y, space activities.

## THE ROLE OF THE PERSONNEL PROPONENT

The personnel proponent has central responsibility for the development of their respective career field. The Commander of United States Army Space and Strategic Defense Command provides recommendations relating to space personnel management matters to the Deputy Chief of Staff for Personnel. The command manages the skill code 3Y through the personnel life-cycle management functions of structure, acquisition, individual training and education, distribution, sustainment, professional development, and separation. The role of the proponent is important to fostering achievement of the goals and objectives of the Army's Officer Personnel Management System and ensures that personnel policies, programs, and procedures incorporate space activities related considerations.<sup>4</sup>

Using the criteria established in 1987 and listed in Appendix 1, there are eleven specific areas which categorize space oriented military missions and functions. They are space plans and policy, space doctrine, space law, space medicine, space concepts, space system research and development, space system test and evaluation, acquisition of space systems or components, space system user requirements, space training, and space system operators.<sup>5</sup> These eleven specific areas were used to develop the personnel authorizations that are contained in Appendix 2.

Appendix 2 is an extract of the Personnel Management Authorization Document (PMAD) for all positions requiring a skill

code 3Y officer. The personnel community uses the Personnel Management Authorization Document as the sole source of active Army authorizations for the current and budget year. This document serves as the basis for decisions on accessions, training, and distribution of personnel.<sup>6</sup>

The authorizations in Appendix 2 are contained in Tables of Distribution and Allowance and Tables of Organization and Equipment. These authorizations reflect management decisions made by Department of the Army in 1988 and 1989. Additionally, the Army Space Institute added positions to 3Y of those who monitor a specific satellite system, are responsible for adjustments to the satellite orbit, or schedule the data to be transmitted through or received from the satellite. The Army Space Institute did not designate as 3Y those positions which receive data from a satellite system operator.<sup>7</sup>

Ninety-nine percent of the positions listed in Appendix 2 are found in units organized under the Tables of Distribution and Allowances. These units have a support mission for which a Table of Organization and Equipment does not exist. There is a significant absence of 3Y positions in corps, divisions, and brigades which are organized under Tables of Organization and Equipment to perform a mission in a specific geographical or operational environment.

This strategy served the Army well during the early years of space research and development. However, as observed in the 1991 Gulf War, space systems and their associated technologies played

a central role for operational and tactical commanders to dampen the Clausewitzian "fog" and "friction" on the modern battlefield.

"Space cannot be considered a separate warfare arena. It crosses all warfare areas and all warfare services. Just as space surrounds and encompasses the entire globe, it surrounds, encompasses, and supports all warriors. To say space is the battleground of any unique warfighting group is paramount to disaster. All warfighters, regardless of the device on their chest or the color of their uniform, must embrace space, understand space, and use space or be destined not to enjoy the tremendous advantage space can give."<sup>8</sup>

During the Cold War, space was a national asset reserved for strategic purposes. Nearly all space systems evolved as strategic systems not tailored to support general purpose forces. Over the years, the United States Space Command managed the development of space systems and improved their application to support general purpose forces.

Prior to DESERT STORM, the Army Space Command, the Army Space Institute, and the Army Space Program Office provided extraordinary support to tie tactical users to available space systems. Satellites carried seventy-five percent of the communications during DESERT SHIELD and DESERT STORM. The Position/Navigation Global Positioning System (GPS) was key to success in mobile warfare. The Reconnaissance, Surveillance, and Target Acquisition (RSTA) systems provided an accurate picture of the enemy during planning and execution of the campaign. Satellites provided accurate theater weather in real-time to better understand the battlefield environment and provided information to develop up-to-date image maps to support terrain

analysis. The Defense Support Program Satellites provided the first indications of ballistic missile attack.<sup>9</sup>

In the next conflict; corps, divisions, and brigades will use satellites for position and navigation, communications, weather, terrain analysis, and warning. Satellites will provide over-the-horizon information to conduct precision strikes throughout the battlefield. Units will dominate the enemy through a digitized network that overmatches his tempo of operations, provides continuous situational awareness, and rapidly and accurately detects targets.<sup>10</sup>

Space enhancement of all these operations is possible. However, the Army must integrate space into the total force structure.

"If space systems are not integrated . . . at the operational and tactical level, we will continue to be victim of foul-ups and system short sightedness such as occurred in Grenada when the force had to use tourist maps to navigate, couldn't communicate between services headquarters, had trouble with routine coordination, and couldn't respond to request for fire support. That systemic problems existed is also evident when the division commander happens upon the only soldier who knew what was arriving on the next airplane. That one soldier was at the arrival airfield with the only direct communication to Green Ramp and the departure airfield at Fort Bragg . . . for space to be truly functional, it must be integrated into each staff section . . ."<sup>11</sup>

The lengthy buildup prior to the start of the Gulf War permitted the delivery, setup, and training on a number of new systems that exploited space. Future conflicts may not provide the time to buildup and permit planners at corps, divisions, and brigades to integrate space into the operational and tactical plans as units deploy to the theater of operation.

Appendix 3 is a list of the 3Y authorizations by specialty and grade. This analysis reflects that eighty-five percent of the 3Y authorizations are contained in combat support arms and functional area specialties. Only eleven percent of the 3Y authorizations are designated as combat arms specialties. The research and development specialty accounts for twenty-six percent of the 3Y authorizations followed by signal at seventeen percent and military intelligence at sixteen percent. This breakdown of authorizations goes against the recommendation made by the Army Science Board in 1963 to practice such expert abilities together with different, traditional Army skills.

As the Army transitions into the twenty-first century, the use of space assets by tactical forces will play a greater role in the execution of the AirLand Battle doctrine. The Army must normalize space in its operations and designate positions in Tables of Organization and Equipment with the skill code 3Y to provide the expertise at corps, division, and brigade level.

The positions listed in Appendix 4 are recommended additions to the authorization documents. The 175 additional positions are on corps, division, and brigade staffs along with positions on the air defense brigade, signal brigade, engineer brigade, and military intelligence brigade staffs. These additions provide representation across the battlefield operating systems and ensure the ability to synchronize activities to produce maximum relative combat power at the decisive time and place.

The additional positions will add ninety-three authorizations to the combat arms specialties, sixty-eight authorizations to the combat support specialties, and fourteen authorizations to the combat service support specialties. The additional authorizations will change the ratio of table of organization and equipment positions versus table of distribution and allowances positions to forty percent and sixty percent respectively. These additions will increase the combat arms authorizations to twenty-eight percent, up from eleven percent. These additions present a better balanced force structure for skill code 3Y.

After developing a balanced force structure, the proponent can proceed to the acquisition, training and education, distribution, and sustainment functions of the personnel life-cycle management functions. The accession criteria for officers into skill code 3Y are outlined in the officer qualifications in Appendix 5. This appendix is the approved change to Ar 611-101 scheduled for publication in the October, 1993, UPDATE.

To qualify for the skill code 3Y, an officer must complete one year of successful duty performance in a documented space activities, 3Y, position; or successfully complete the Joint Space Fundamentals course and serve six months in a documented space activities position; or successfully complete undergraduate space training or a bachelor of science degree in aero space engineering, aero space medicine, robotics, or other space related technical fields; or successfully complete the space

activities elective portion of the Command and General Staff College. After meeting one of the four criteria, the officer submits a DA Form 4187 along with a copy of their officer record brief to the Commander, United States Army Space Command, Colorado Springs, Colorado.

One of the problems in this acquisition process is the role of the Commander, United States Army Space and Strategic Defense Command. He officially serves as the personnel proponent but the administrative process still reflects the Commander, United States Army Space Command as the personnel proponent. An additional problem is the voluntary nature of acquiring the skill code 3Y. The current inventory of 3Y is 490 officers to fill 297 authorized positions. As the Army increases the number of authorized positions to 452 to achieve a balance in the force structure, it must increase the inventory of 3Y officers. Appendix 6 contains a list of space related academic disciplines validated for skill code 3Y. Using these disciplines as a guideline, the personnel command can screen officer records and award the skill code 3Y involuntarily to officers who possess a degree in the related discipline.

Closely related to the officer acquisition function is the individual training and education function for skill code 3Y. Officers can attend joint service courses, Army Education Requirement Board (AERB) schooling, or Training With Industry (TWI) to acquire the skills and knowledge for skill code 3Y.

The Army space training concept provides a three-tiered approach to skill code 3Y; introductory tier, intermediate tier, and advanced tier.

The objective of the introductory tier training is to provide officers in a non-operator, 3Y position, a basic understanding of the space program, space environment, and space systems. The courses offered are detailed in Appendix 7 and include the Joint Space Fundamentals course, the Joint Space Intelligence/Operations course, and the Command and General Staff College Space Operations elective. These three courses are appropriate to train officers assigned to skill code 3Y positions on corps, division, and brigade staffs.

The objective of the intermediate tier of skill code 3Y training is to provide an operational knowledge of space systems and skill for officers in operator, skill code 3Y positions. The primary course in this tier is the Undergraduate Space Training course detailed in Appendix 7.

The objective of the advanced tier of skill code 3Y training is to provide highly specialized education and training through civil schooling or industry training programs for the application of mature and emerging technologies to meet Army needs. This specialized training is required for application of technical knowledge and skill to validated Army Education Requirements Board or Training With Industry programs.

The Army Educational Requirements Board positions require the incumbent to have a graduate degree. The Army will send an

officer to school under the Army Civil Schools program for twenty-six weeks or longer to obtain a needed degree. Upon graduation, the officer is obligated to serve a thirty-six month tour in the Army Education Requirements Board validated positions. Participants in the Training With Industry program are assigned for one year of training followed by an obligated three year utilization assignment requiring interactions with civilian industry.

The individual training and education program is adequate to support the training of skill code 3Y officers. However, general Army training is needed to "enhance the Army's ability to execute the AirLand Battle, in joint and combined efforts, for all levels of war, across the full spectrum of conflict by using space system capabilities."<sup>12</sup> This training will support the Army Space Concept by providing officers instruction at advanced courses, combined arms service support school, joint planning courses, command and staff colleges, and senior service colleges. In his role as personnel proponent, the Commander, United States Army Space and Strategic Defense Command can identify the requirements for the development and revision of training at these courses, ensure that training is in concert with all aspect of professional development, and recommend standards for personnel who instruct in other service schools or serve in liaison positions.

Once the force structure is established and the policies for acquisition of officers and training of officers implemented, the

personnel proponent evaluates the inventory and recommends adjustments to support the authorizations. A skill code is unique from a branch or functional area specialty because it does not receive the level of management by the personnel command that is devoted to the branches and functional areas of the Army. The personnel proponent holds the primary responsibility to recommend changes in Army policy relating to assignment, details, transfers, and special programs for the life-cycle management of that skill code.

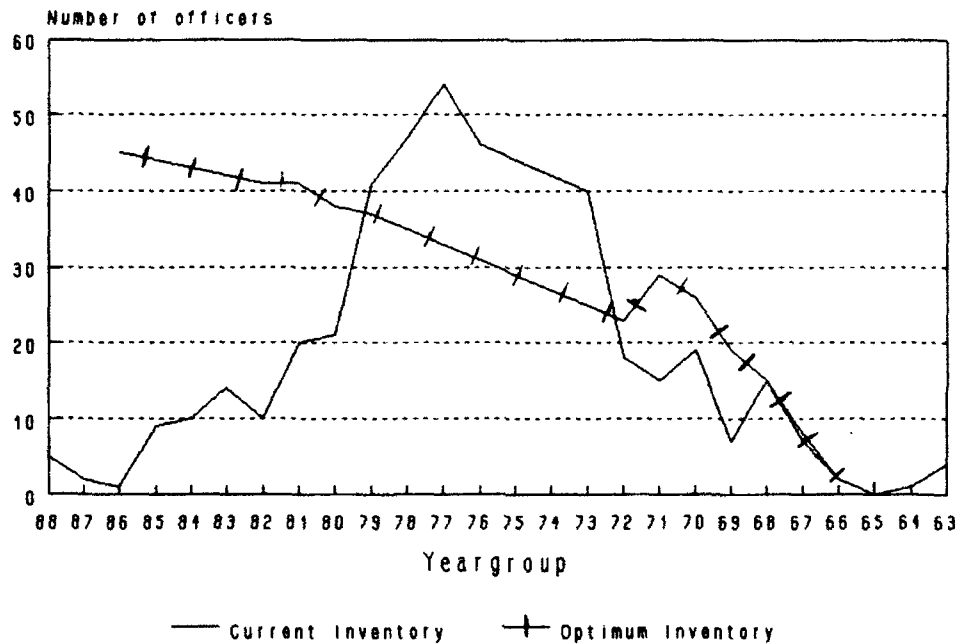
Appendix 8 contains the inventory for skill code 3Y distributed by branch and grade. Seventy-six percent of the 3Y inventory consists of officers in the combat support specialties and the acquisition corps. Acquisition corps accounts for thirty-eighty percent, signal corps for sixteen percent, and military intelligence for sixteen percent of the officer inventory in skill code 3Y. The combat arms specialties account for sixteen percent divided between six branches. This distribution of the inventory reflects the earlier structure of the skill code and the reliance on combat support positions and research and development positions to establish the Army space program. As the Army transitions its space program to better support tactical and operational commanders along with achieving balance between table of distribution units and table of organization and equipment units, the personnel proponent must recommend policies that lead to development of a balanced inventory to meet skill code 3Y authorizations.

A second issue in the skill code 3Y inventory is the grade distribution. In the aggregate, at the grade of major, lieutenant colonel, and colonel; there are two officers to fill each authorization. However, at the grade of captain, there are insufficient officers to fill the authorizations with designated 3Y officers. The grade of captain is normally when an officer acquires a functional area and begins the development in that functional area. The combination of the functional area development and the development of skill code 3Y captains will place additional pressure on the assignment officers to meet the requirements. One approach to solve this dilemma is to manage the functional area designation to coincide with the assignment of skill code 3Y of the newly designated captains. This technique will accomplish a utilization tour in the functional area along with an initial tour as a 3Y.

The third issue with the current inventory is the yeargroup distribution. Appendix 9 contains the distribution of the current inventory by yeargroup. Figure 1 graphically depicts this distribution with high numbers contained in yeargroup 1973 to 1979. The inventory decreases by fifty percent in yeargroup 1980 and 1981 and another fifty percent in 1982, 1983, and 1984. The recommendation is to increase the number of 3Y officers in yeargroups 1980 to 1985 to meet the demands for the grade of captain and major. The following illustration reflects the current inventory and the optimum inventory to support skill 3Y. The shortage of officers in yeargroups 1980 to 1985 creates an

adverse effect on the ability to assign a skill code 3Y officer.

### Inventory by Yeargroup



The excess number of officers in yeargroup 1973 to 1979 reflects the Army's efforts to develop the space program in 1987 and 1988.

The personnel proponent plays an important role in sustaining the inventory of 3Y officers. He represents the professional interest of the soldiers and fosters a positive attitude toward the personnel systems and programs by maintaining contact with the soldiers on a periodic basis. In the past the Army Space Institute maintained contact on a quarterly basis through a Space Activities, Skill Code 3Y Bulletin. This media provided the officer an excellent update of the status of the

Army space program and the personnel programs to support skill code 3Y.

#### CONCLUSIONS

The Commander, United States Army Space and Strategic Defense Command is the primary responsible agent for skill code 3Y, space activities. His ability to integrate the personnel life-cycle management functions toward the goal of developing professional officers in the Army space program contributes to the success or failure of the skill code 3Y.

The Commander, United States Army Space and Strategic Defense Command needs to establish himself as the sole personnel proponent in defining developmental needs, refining requirements in the field, and providing assistance to improve all aspects of the Army's personnel management system for skill code 3Y.

Improvements are needed in the authorizations to achieve a balance between the field Army table of organization and equipment and the corporate Army table of distribution and allowances. Tactical and operational commanders need space experts on their staffs to fully integrate space into the campaign plans.

The Commander, United States Army Space and Strategic Defense Command must serve as the approval authority for qualifying officers in skill code 3Y. This process will balance the acquisition of officers into space, strategic defense, and other organizations in the Army that rely on space qualified personnel.

The education program for skill code 3Y appears sound and viable even with the increase in officer strength. Attention is needed in the general education of the Army on space capabilities and can best be taught at the service schools.

Restructuring the skill code 3Y inventory presents the greatest challenge to the personnel proponent. This action requires additional acquisitions at the grade of captain and managing the inventory through its life-cycle. The problem is complicated by the fact that a skill code does not receive the attention that a branch or functional receives and therefore will require more intense management by the proponent to achieve his goals.

All of these recommendations are important as an integrated package because individually they will not achieve the direction the Army need to travel to successfully "normalize" space as part of its warfighting capability in the twenty-first century.

## ENDNOTES

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## APPENDIX 1

### SKILL CODE 3Y DEFINITION

#### SKILL CODE 3Y: SPACE ACTIVITIES OFFICER

**Description of Positions:** For positions that require personnel to apply technical knowledge of either the space environment, space system composition and functioning, space related technologies, or civilian-military space operations. Such positions require incumbents to formulate space policy, develop space related operational concepts, and evolve doctrine or law; to conduct research in, and development of technologies as applied to the space environment, testing, and acquisition of space systems; or to plan, evaluate, and implement the tactics and techniques for the operation and use of space systems, including platforms and/or payload control.

**Officer Qualifications:** Individuals must have one year of successful duty performance in an authorized Space Activities position or experience with spacecraft development (e.g. Space Test Program Office, NASA, other service space program office, or industry), or must have completed a United States Army Space Institute designated course of instruction conducted by a Department of Defense organization providing satellite controller courses, a space Training With Industry program, or a composite of short course training and various symposia; or must have completed undergraduate or postgraduate work in a United States Army Space Institute approved space related discipline(s), such as Space Systems Operations, Space Systems Engineering, Artificial Intelligence, Astrodynamics, or other academic or work related experience evaluated by the Assistant Secretary of the Army (Research, Development, and Acquisition) as equivalent to a United States Army Space Institute prior approved course of instruction.

**Source:** Army Regulation 611-101, Commissioned Officer Classification System.

# APPENDIX 2

## PERSONNEL AUTHORIZATIONS BY COMMAND AND UNIT

### TABLE OF DISTRIBUTION AND ALLOWANCES

MAJOR COMMAND/UNIT	CPT	MAJ	LTC	COL	TOT
U.S. ARMY INTELLIGENCE AND SECURITY COMMAND					
MI Battalion (EAC)		1			1
MI Battalion (EAC)		1			1
704th MI BDE	2		1		3
Command Total	2	2	1		5
OFFICE, CHIEF OF STAFF, ARMY					
Dep Ch of Staff Intelligence		2	3		5
Dep Ch of Staff Operations		1	2	1	4
Command Total		3	5	1	9
U.S. ARMY INFORMATION SYSTEMS COMMAND					
Headquarters, USAISC	1	1			2
Command Total	1	1			2
DEPARTMENT OF DEFENSE AGENCIES					
U.S. Army Element Defense Nuclear Agency		3	2	1	6
U.S. Army Element Office of the Joint Chiefs of Staff			4	1	5
U.S. Army Element National Communications System			1		1
U.S. Army Center for Information Management			1	1	2
U.S. Army Defense Network Systems Organization	2	2	1		5
U.S. Army Strategic Defense Initiative Organization		3		1	4
U.S. Army Element Joint Tactical Command, Control, Communications			1		1

U.S. Army Element Defense Mapping Agency, Hydro/Topo Center		3		1	4
U.S. Army Element Defense Mapping Agency, Defense Mapping School	5	3	2	1	11
U.S. Army Element Defense Mapping Agency, Reston Center			1	1	2
Miscellaneous Account	1	3	7		11
Command Total	8	17	20	7	52
U.S. ARMY HEALTH SERVICES COMMAND					
Academy of Health Sciences	3	1		1	5
Command Total	3	1		1	5
JOINT ACTIVITIES					
U.S. Army Element U.S. European Command Headquarters		1	1		2
U.S. Army Element U.S. Space Command	13 2LT	13	11	3	42
U.S. Army Support Outside DoD Activity		2			2
U.S. Army Element North American Aerospace Defense Command	3	3	1		7
Command Total	16 2LT	19	13	3	53
U.S. ARMY WESTERN COMMAND					
U.S. Army Japan Headquarters	1				1
Command Total	1				1
OFFICE, SECRETARY OF THE ARMY					
Office Assistant Secretary of the Army, Research and Development				1	1
Office of the Director of Information Systems for Command, Control, Communications			1	1	2
Command Total			1	2	3

U.S. ARMY STRATEGIC DEFENSE COMMAND					
U.S. Army Strategic Defense Command Headquarters	4	35	20	7	66
U.S. Army Space Agency	19 7LT	16	9	4	55
Command Total	23 7LT	51	29	11	121
FIELD OPERATING AGENCIES					
U.S. Army War College				1	1
Command Total				1	1
U.S. ARMY SPECIAL OPERATIONS COMMAND					
U.S. Army John F. Kennedy Special Warfare Center and School	1				1
Command Total	1				1
U.S. ARMY TRAINING AND DOCTRINE COMMAND					
U.S. Army Signal Center and Fort Gordon	1				1
U.S. Army Aviation Center and Fort Rucker	1				1
U.S. Army Engineer Center and Fort Leonardwood	1	1			2
U.S. Army Combined Arms Center and Fort Leavenworth	1	1	4	1	7
U.S. Army Quartermaster Center and School	1				1
U.S. Army Transportation Center and Aviation Logistics School	1				1
U.S. Army Intelligence Center and School	3	1	1		5
U.S. Army Training and Doctrine Command	1	3			4
U.S. Army Logistics Center and Fort Lee	1				
Command Total	11	6	5	1	23

U.S. ARMY MATERIEL COMMAND					
U.S. Army Test and Evaluation Command Headquarters		2			2
U.S. Army Electronic Proving Ground	1				1
U.S. Army Research Office			1		1
U.S. Army Laboratory Command	1	2		2	5
Command Total	2	4	1	2	9
U.S. ARMY ACQUISITION AGENCY					
U.S. Army Acquisition Management Support Agency	2	3	1	2	8
Command Total					
TABLE OF DISTRIBUTION AND ALLOWANCES TOTAL	70 2LT	107	76	31	293

TABLE OF ORGANIZATION AND EQUIPMENT

COMMAND\UNIT	CPT	MAJ	LTC	COL	TOT
FORCES COMMAND					
Headquarters 3rd U.S. Army		1	1		2
Command Total		1	1		2
U.S. ARMY INTELLIGENCE AND SECURITY COMMAND					
	1				1
Command Total	1				1
U.S. ARMY INFORMATION SYSTEMS COMMAND					
229th Signal Company	1				1
Command Total	1				1

TABLE OF ORGANIZATION AND EQUIPMENT TOTAL	2	1	1		4

TOTAL ALL UNITS

TOTAL ALL UNITS	72	108	77	31	297
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SOURCE: Personnel Management Authorization Document (PMAD)

# APPENDIX 3

## PERSONNEL AUTHORIZATIONS BY SPECIALTY AND GRADE

SC	TITLE	LT	CPT	MAJ	LTC	COL	TOT	%
	COMBAT ARMS							
11	Infantry		1	2			3	1
12	Armor		1				1	
13	Field Artillery		1	1		1	3	1
14	Air Defense		1	3	3	2	9	3
15	Aviation	1		4	4	1	10	3
18	Special Forces		1	1			2	
01	Branch Immaterial		1	1	1	2	5	2
	Total	1	6	12	8	6	33	11
	COMBAT SUPPORT							
21	Engineer		7	8	7	4	26	9
25	Signal	4	21	13	9	4	51	17
35	Military Intelligence	3	16	14	14	1	48	16
02	Immaterial				2	1	3	1
	Total	7	44	35	32	10	128	43
	Combat Service Support							
42	Adjutant General			3			3	1
88	Transportation	1	1				2	1
91	Ordnance		1				1	
92	Quartermaster		1				1	
	Total	1	3	3			7	2
	Functional Area							
45	Comptroller					1	1	
46	Public Affairs		1				1	
49	Operations Research			1	7	1	9	3
51	Research and Development		8	44	16	9	77	26

52	Nuclear Weapons			2	2	1	5	2
53	System Automation		2	2	2		6	2
54	Operations		5	7	9	2	23	8
97	Procurement			1	1		2	1
	Total		16	57	37	14	124	42
	Health Services							
61	Medical					1	1	
67	Medical Service Corps		3				3	1
68	Medical Service Corps			1			1	
	Total		3	1		1	5	2
	ALL SPECIALTIES TOTAL	9	72	108	77	31	297	
	PERCENT BY GRADE	3%	24%	36%	26%	10%		

SOURCE: Personnel Management Authorization Document (PMAD)

# APPENDIX 4

## RECOMMENDED ADDITIONS TO AUTHORIZATIONS

UNIT AND POSITION	BRANCH	CPT	MAJ
CORPS X 4			
Assistant G2, Plans	MI		4
Assistant G3, Plans	CA		4
Assistant G6, Plans	SC		4
Materiel Management	CSS		4
Engineer	EN		4
Air Defense	AD		4
Fire Support Officer	FA		4
Total Corps			28
DIVISION X 10			
Assistant G2, Plans	MI	10	
Assistant G3, Plans	CA		10
Assistant G6, Plans	SC	10	
Materiel Management	CSS	10	
Engineer	EN	10	
Air Defense	AD	10	
Fire Support Officer	FA		10
Total Division		50	20
BRIGADES AND ACR X 45			
Assistant S3	CA	45	
Total Brigade		45	
AIR DEFENSE BRIGADE X 6			
Assistant S3	AD	6	

SIGNAL BRIGADE X 6			
Assistant S3	SC	6	
MILITARY INTELLIGENCE BRIGADE X 12			
Assistant S3	MI	12	
ENGINEER BRIGADE X 8			
Assistant S3	EN	8	
TOTAL ALL UNITS		127	48

SOURCES: Table of Organization and Equipment

corps headquarters

division headquarters

brigade headquarters

armored cavalry regiment headquarters

air defense brigade headquarters

engineer brigade headquarters

signal brigade headquaretrs

military intelligence brigade headquarters

## APPENDIX 5

### REVISION OF SKILL CODE 3Y (SPACE ACTIVITIES)

3Y            Space Activities

USA Space Command

a. Description of positions. Identifies positions that require the assignment of officers who can apply technical knowledge of either the space environment, space system composition and functioning, space related technologies, or civilian-military operations. Such positions require incumbents to formulate space policy, develop space related operational concepts, and evolve doctrine of law; to conduct research in, and development of technologies applied to the space environment, testing, and acquisition of space systems; or to plan, evaluate, and implement the tactics and techniques for the operation and use of space systems, including platform and/or payload control.

b. Qualifications. Individuals must have 1 year of successful duty performance in a documented Space Activities (SI 3Y) position or successful completion of the Joint Space Fundamentals Course and six months in a documented Space Activities (SI 3Y) position or successful completion of Undergraduate Space Training or a Bachelor of Science Degree in Aero Space Engineering, Aero Space Medicine, Robotics or other space related technical fields or completion of the elective Space Activities portion of the Command and General Staff Course (CGSC).

c. Restrictions. The addition or deletion of SI 3Y from authorization documents (Modified Table of Organization and Equipment (MTOE) and Table of Distribution and Allowances (TDA)) must be coordinated in writing and be approved by the Commander, U.S. Army Space Command, ATTN: MOSC-SP, 1670 N. Newport Road, Colorado Springs, Colorado 80914-5000. Officers who qualify for award of SI 3Y should submit their request (DA Form 4187) delineating qualifications, along with a copy of their current Officer Record Brief (ORB), through their Commander to the Commander, U.S. Army Space Command, ATTN: MOSC-SP, 1670 N. Newport Road, Colorado Springs, Colorado 80914-5000.

SOURCE: Army Regulation 611-101 UPDATE, October, 1993

## APPENDIX 6

### SPACE RELATED ACADEMIC DISCIPLINES

<u>DISCIPLINE</u>	<u>AREA OF STUDY</u>
Electrical Engineering	Broad Band (Laser) communications Distributed Arrays Multistatic Radar High Pulse Power Synthetic Aperture Radar (SAR) Very High Speed Integrated Circuit Wafer-level Union of Devices Multi Spectral Images Computer Systems
Physics/Chemical/Solid State	Superconductivity Anti-matter High Energy-Density Propellants Kinetic Energy weapon Technology Photonics Ferro-Electric Solid-State Devices Fiber Optics Adaptive Optics/Beam Control Non-Linear Optics Infrared focal Planes Full-Spectrum-Ultra Resolution
Sensors	Optical Image Processing Quantum Well Devices
Aerospace/Mechanical Engineer	Kinetic Energy Weapon Technology
Computer Science	Parallel Processing/Neural Nets Knowledge Base System
Robotics	Micro Devices Control Systems Micro Electronics Locomotion Terrain Recognition Super Conductivity
Ceramic Engineers	Ceramic Materials
Biotechnology	Genetic Engineer Genetic Manipulation Environment Analysis

DISCIPLINEAREA OF STUDY

Computer Technology

Artificial Intelligence  
Robotics Integration  
Machine Learning  
Algorithm Development

Mechanical Engineering

Carbon Fiber  
Environmental Effect and Design  
IntegrationEngineering-Construction  
TechnologyComputer Assisted Design and  
Management  
New Material  
Equipment Analysis  
Composite Structures

Geology

Topography

Remote Sensing/Imagery

## APPENDIX 7

### TRAINING COURSES

#### JOINT SPACE FUNDAMENTALS COURSE (JSFC)

This course provides preparatory space awareness fundamental training for Air Force, Army, Navy, and Marine Corps personnel entering nonoperator positions within the space operations arena. The scope of training includes space terminology, space environment, orbital mechanics, background of space exploration and operations, space organizations, space systems acquisition process (DoD/service Perspective), operational spacecraft systems, spacecraft systems and design theory, space support operations, surveillance, detection, and warning networks, future systems, space operations site activities, joint forces exercises, and security.

This course provides fundamental instruction on US and other forces space capabilities.

Prerequisites: Officers (captain to colonel), security clearance: Secret.

#### JOINT SPACE INTELLIGENCE/OPERATIONS COURSE (JSIOC)

This course includes the space environment, military employment of space, collection and acquisition, intelligence analysis and production, and space intelligence application to support operations.

This course prepares intelligence, operations, and other staff action personnel for assignment to space-related positions.

Prerequisites: Officers (lieutenants to lieutenant colonels), security clearance: Top secret with access to SI/TK.

#### UNDERGRADUATE SPACE TRAINING (UST)

This course provides Army students with skills needed to perform duties associated with space operations. Training includes: space operations career field; science fundamentals to include math, physics, space environment, orbital mechanics; Technical fundamentals to include computers, communications, space flight, sensors, future technology; nontechnical fundamentals to include history, policy, doctrine, law, acquisition; and applications to include organization, sensor operations, satellite operations, shuttle operations, command center operations, and foreign systems.

This course completion is mandatory for U.S. Army personnel assigned to operational crew and selected staff positions in the U.S. Space Command and selected crew and staff positions in the U.S. Army Space Command. UST provides comprehensive instruction in command and control, space surveillance and missile warning, satellite operations and manned space operations for Army research and development, training, combat and materiel development personnel requiring detailed space expertise.

Prerequisites: Officers (captain to colonel), two college semesters of mathematics, one of which must be calculus, security clearance: Secret.

COMMAND AND GENERAL STAFF COLLEGE (CGSC)  
SPACE OPERATIONS ELECTIVE

This course is designed to produce officers capable of functioning on joint and combined staffs, service component staffs, and acquisition and combat development positions. Officers completing this course of instruction will have the knowledge necessary to plan for and apply space technologies and capabilities that support military operations. The course will provide training in space fundamentals, space intelligence, and space operations and their relation to tactical, operational, and strategic missions. The training includes space terminology, orbital mechanics, space environment and history, space systems, space organizations, early detection and warning networks, future systems, and features a space operations practical exercise to familiarize students with the military applications of space.

Course objectives are: produce officer capable of functioning in Army space related positions and higher level staffs; provide Army officers with general and specific knowledge of space and how space capabilities support military operations; increase awareness of the importance of space to Army tactical, operational, and strategic operations; and educate members of other services on the Army role in space.

Prerequisites: Officers attending CGSC> Security Clearance: Top secret SI/TK.

# APPENDIX 8

## 3Y INVENTORY BY BRANCH AND GRADE

BRANCH	CPT	MAJ	LTC	COL	TOT
COMBAT ARMS					
Air Defense		9	13		22
Armor	1	6	3		10
Aviation	2	7	8		17
Field Artillery	1	5	6	2	14
Infantry		4	7	1	12
Special Forces		4			4
Total Combat Arms	4	35	37	3	79
COMBAT SUPPORT					
Chemical	1	2			3
Engineer	4	15	6	3	28
Military Intelligence	16	34	22	6	78
Military Police		1			1
Signal	19	28	24	5	76
Total Combat Support	40	80	52	14	186
COMBAT SERVICE SUPPORT					
Adjutant General		1	4		5
Ordnance	1	4	5		10
Quartermaster	1	3			4
Transportation	1	2			3
Total Combat Service Support	3	10	9		22
ACQUISITION CORPS	15	80	70	22	187
OTHER SINGLE TRACK					
Comptroller		1			1
USMA Professors			3	3	6
Operation Research	1	1			2

Research and Development		1	1		2
Nuclear Weapons		3			3
Systems Automation		1	1		2
Total Others	1	6	5	3	16
TOTAL ALL BRANCHES	63	212	173	42	490

SOURCE: Officer Personnel Management Database, PERSCOM

# APPENDIX 9

## SKILL CODE 3Y INVENTORY BY YEARGROUP

YEARGROUP	CPT	MAJ	LTC	COL	TOTAL
1963				4	4
1964				1	1
1965					0
1966			1	1	2
1967				7	7
1968			1	10	11
1969			1	6	7
1970			8	11	19
1971			13	2	15
1972		1	17		18
1973		8	32		40
1974		12	30		42
1975		5	39		44
1976		17	29		46
1977		54			54
1978		46	1		47
1979		40	1		41
1980		21			21
1981	12	8			20
1982	10				10
1983	14				14
1984	10				10
1985	9				9
1986	1				1
1987	2				2
1988					5
TOTAL ALL	63	212	173	42	490

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